

IN THE CLAIMS:

1. (currently amended): A process for separating one or more members selected from the group consisting of C_{4-8} -diolefins and C_{6-12} aromatic hydrocarbons which are unsubstituted or substituted by up to three C_{1-8} alkyl radicals from a mixture consisting of comprising at least one of said members and at least one member selected from the group consisting of paraffins and higher aromatics other hydrocarbon comprising contacting said mixture with a copper or silver complexing compound in a nitrogen containing ionic liquid having a melting temperature below 80°C to preferentially take said one or more members into said ionic liquid, separating said ionic liquid from said at least one member selected from the group consisting of paraffins and higher aromatics other hydrocarbon and regenerating said ionic liquid and releasing said at least one member.
2. (original): The process according to claim 1, wherein the copper or silver complexing compound is selected from the group consisting of silver acetate, silver nitrate, and silver tetrafluoroborate and mixtures thereof.
3. (previously presented): The process according to claim 2, wherein said nitrogen containing ionic liquid is a heterocyclic nitrogen-containing aromatic compound.

4. (original): The process according to claim 3, wherein said heterocyclic nitrogen containing aromatic compound is a C₅₋₈ nitrogen containing aromatic compound which is unsubstituted or substituted by up to three C₁₋₈ alkyl radicals.

5. (previously presented): The process according to claim 2, wherein said nitrogen containing ionic liquid is a nitrogen containing tetrafluoroborate ionic liquid.

6.(previously presented): The process according to claim 5, wherein said nitrogen containing ionic liquid is selected from the group consisting of imidazolium and pyridinium ionic liquids which are unsubstituted or substituted by up to two C₁₋₈ alkyl radicals.

7. (previously presented): The process according to claim 6, wherein said nitrogen containing ionic liquid is selected from the group consisting of 1-butyl-3-methylimidazolium tetrafluoroborate and 4-methyl-N-butylpyridinium tetrafluoroborate.

8. (original): The process according to claim 7, wherein said mixture is in the gas or liquid state.

9. (previously presented): The process according to claim 8, wherein said regeneration of said nitrogen containing ionic liquid and said releasing of at least

one member is effected using one or more treatments selected from the group consisting of increasing temperature, decreasing pressure, and passing an entraining gas through said ionic liquid.

10. (previously presented): The process according to claim 9, wherein said mixture and said nitrogen containing ionic liquid are contacted in a counter-current flow.

11. (previously presented): The process according to claim 9, wherein said mixture and said nitrogen containing ionic liquid are contacted in co-current flow.

12.(previously presented): The process according to claim 9, wherein said mixture and said nitrogen containing ionic liquid are contacted in a continuous stirred tank reactor.

13. (previously presented): The process according to claim 1, wherein the nitrogen containing ionic liquid optionally contains from 0 to 15 volume % of water.

14. (previously presented): The process according to claim 6, wherein the nitrogen containing ionic liquid optionally contains from 0 to 15 volume % of water.

15. (previously presented): The process according to claim 7, wherein the nitrogen containing ionic liquid optionally contains from 0 to 15 volume % of water.